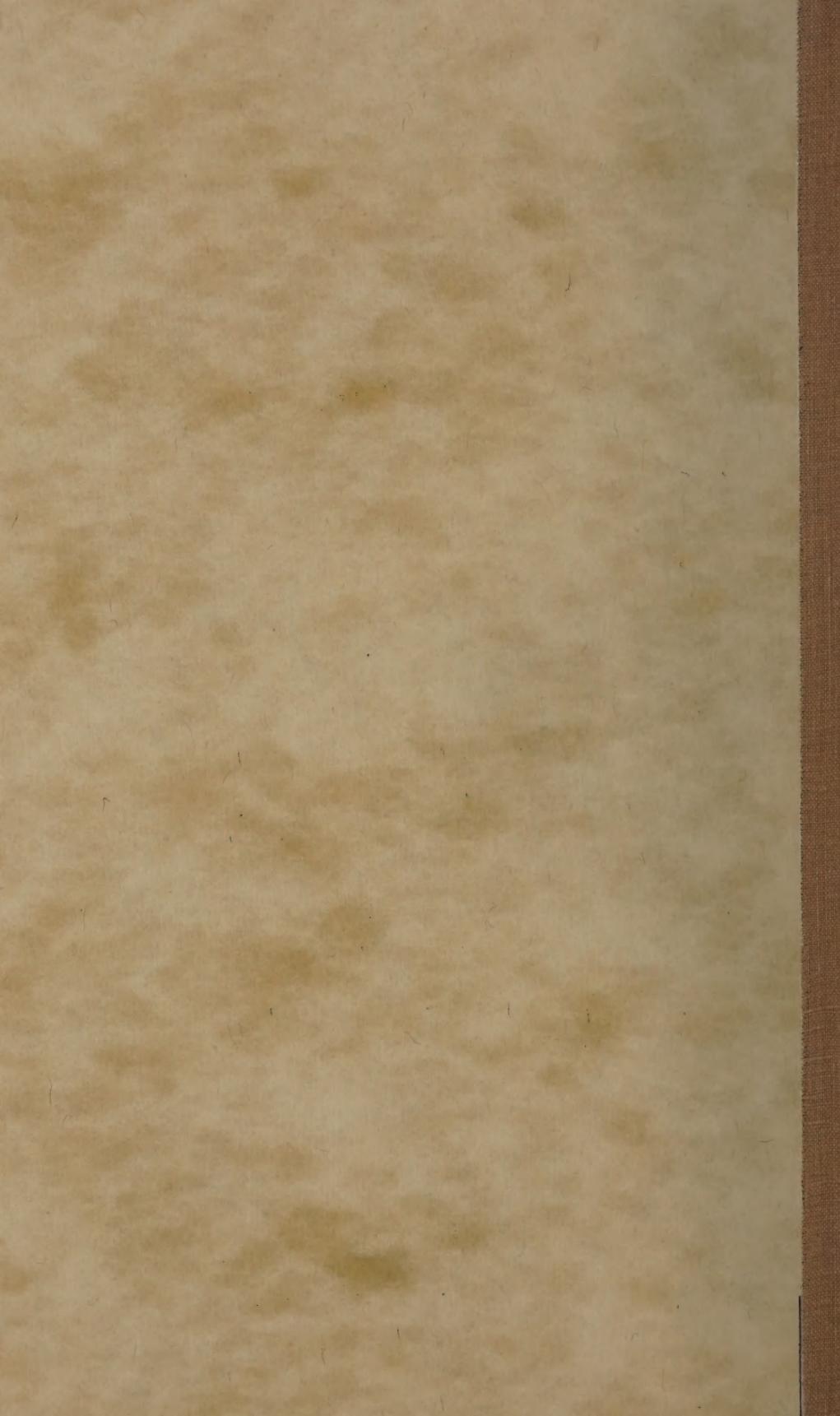


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# EXPLANATORY LECTURE

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ON

## VISIBLE SPEECH,

THE SCIENCE OF

Universal Alphabetic.

DELIVERED BEFORE THE COLLEGE OF PRECEPTORS, FEB. 9, 1870.

BY

ALEX. MELVILLE BELL, F.E.I.S.,

LECTURER ON ELOCUTION IN UNIVERSITY COLLEGE, LONDON.

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## COLLEGE OF PRECEPTORS.

EVENING MEETING, FEBRUARY 9th, 1870.

THE Chair having been taken by Dr. W. B. HODGSON,  
A. MELVILLE BELL, Esq., read the following Paper,

### ON VISIBLE SPEECH,

### THE SCIENCE OF UNIVERSAL ALPHABETICS.

I HAVE to introduce to you a new Science—the Science of Universal Alphabetics, or Visible Speech; and I wish to give you such an insight into the details of the subject as will enable those who may desire to prosecute the study for any practical purpose, to do so without difficulty.

In the first place, the idea intended to be expressed by the title "Visible Speech" is totally new, and therefore requires to be explained. In a certain sense all writing may be called Visible Speech, because letters are the visible forms by which the sounds of speech are conventionally expressed. But the sense in which I use the term is very different. Speech consists of certain movements of the throat, the tongue, and the lips; and in different countries the same letters are associated with a different set of movements, or the same movements are associated with different sets of letters; so that you may know the letters perfectly in connection with one language, and yet be unable to pronounce them in any other language. Visible Speech consists of writing, which depicts the actual movements of the organs of speech; and thus, in whatever language you may have learned the alphabet of the system, you can pronounce the sounds of any other language at sight of their symbols, although you may never have heard the sounds produced. The Visible Speech letters represent the Organs of Speech, and all their modes of action; and as the same organs are common to all men, and the effect of every action is the same in all mouths, the letters have a universal meaning, which is independent of differences of language or conventional associations.

In this respect, the Visible Speech letters resemble musical notes or arithmetical numbers. Like musical notes, they have a uniform value in relation to sound in all countries; and like the Arabic

numerals, they have an absolute value in relation to meaning in all languages. For example, the letter which represents the English sound of L directs the reader to "raise the point of the tongue against the palate, and sound the voice over the sides of the tongue;" and the letter which represents the sound of M consists of parts which express to the eye the practical direction, "close the lips, and sound the voice through the nose." It is therefore obvious that, however variously these directions might be put in *words* in different languages, the effect of *following* the directions will be precisely the same in all mouths in every country.

Ordinary letters have no relation to sounds. The associations are entirely arbitrary. That which we call H is the vowel E to the Greeks and the Russians; our P is their R; our E is A to the French, the Italians, and many others; our I is their E, and our A is their Ah. Besides this international diversity, almost every letter is used for a variety of sounds in the same language; and no alphabet contains a letter for every native sound. The English alphabet is extremely imperfect. For six of our Consonants, and for double that number of our Vowels, we have no letters; while, at the same time, for several of our sounds we have duplicate letters in our doubly defective A B C. In the alphabet of Visible Speech every letter has a fixed phonetic value, every sound has its own appropriate symbol, and every part of every letter has a definite physiological meaning.

But before explaining to you the symbolic basis of the Universal Alphabet, I would correct or prevent a misapprehension which is very common with respect to the objects and uses of the system of Visible Speech. It is not proposed to supersede old alphabets by the new letters, or to touch established orthography in any country. I simply furnish an independent key to every local system of letters, by which to facilitate the pronunciation of all tongues, whether native or foreign. For many missionary, commercial, and social purposes—for writing the languages of unlettered tribes—for the lightning pen of the telegraph, which records in one land, while the hand that guides it is on another continent—for teaching speech to those whose ears are closed to sounds, and for many other special objects of scientific interest and international importance, the system of Visible Speech has a field of usefulness which is altogether distinct from that of other letters. There is thus no rivalry between the new and the old. Both may co-exist in perfect harmony, and the Physiological Alphabet may be fitly welcomed by the most conservative of orthographers as a handmaid, and should not be regarded as an opponent.

One of the most interesting applications of Visible Speech is that of teaching the deaf and dumb to articulate. No difficulty has been found in communicating the principle of this system to deaf-mutes, and the power of producing sounds has been readily developed as soon as the mechanical means of their production has been comprehended through the eye. Speech is altogether mechanical, and the difficulty hitherto in teaching the deaf and dumb to speak has arisen,—

1st. From the want of exact knowledge of the relations of speech-sounds; and

2ndly. From the impossibility of communicating with exactness such knowledge as was possessed.

Visible Speech furnishes both the knowledge and the means of communicating it; and when the system is brought into application by skilful teachers, it will make the acquisition of articulate speech by the deaf and dumb both certain and speedy.

The system has already been experimentally applied in this direction; and the result was, that the learners were enabled to pronounce the majority of English sounds, elementarily, within a few days; and to combine the elements into syllables and words within a couple of weeks. The progress of these pupils has since kept up the promise of their initiation, and they are now reading fluently from ordinary books.

There can be no doubt that, by using Visible Speech symbols as an initiatory key to sounds, all deaf mutes may be trained to clear and intelligible articulation; and that this result will be obtained in a fraction of the time that has been hitherto required to produce the painfully imperfect utterance with which labour and art had been able to endow only a small proportion of those born deaf and dumb.

Of course, that which is accomplished through the eye alone, when the assistance of the ear is wanting, is much more easily effected when the faculty of hearing is possessed. Visible Speech has already, in several cases of speechlessness without deafness, been the means of communicating the power of perfect utterance in an extremely short time—a period measured by weeks at most.

These practical evidences of facility under comparatively unfavourable circumstances, furnish good ground for the belief, that illiterate persons of ordinary capacity may be taught by this system of letters to read their own language in a few days. This statement, while it was based on theory only, was, not unnaturally, received with incredulity; but I trust that after you have seen the details of the system, you will be disposed to endorse it as a rational expectation. It will undoubtedly be verified whenever means are taken to give the system this philanthropic direction. At present, books are wanting, and teachers are wanting—printing material is wanting—but let the method be fairly appreciated and these necessary appliances be provided, and such a phenomenon as an illiterate adult may speedily become rare in any civilized country.

Many attempts have been made at various times to realize the idea of a Universal Alphabet, but none of the adopted methods gave even distant promise of success. In 1854, the last influential effort was organized by a Conference of the leading Philologists of different countries, but they declared the desired object to be one for which there was not even a ground of hope, so entirely were the physiological relations of elementary sounds unknown to those best informed on the subject; and in 1865, Mr. Alexander John Ellis, the most accomplished phonetician of the age, and the author of the most perfect Analysis of Speech that had then been published, had the magnanimity to write that until he became acquainted with "Visible Speech" he had no knowledge

of Alphabetics as a science—that such a science, in fact, did not exist. All previous attempts after a universal alphabet had been based on existing letters. A complete scheme was sought to be constructed by a selection of elements out of old alphabets, but a perfect result on this basis was found to be impossible, and avowed to be hopeless. There are two ways of doing most things; and while philologists were at work on the alphabets of all nations, to discover from them the circle of speech sounds, another method of investigation was being prosecuted at the source of speech sounds, in the mouth itself, to discover, from the organs of speech in motion, the whole possibilities of their action and mutual influence. The process of research was long and difficult; but after extending over nearly a score of years, it was at last successful. The results are embodied in the little Table of Symbols constituting the "Universal Alphabet of Visible Speech," in the accompanying sheet of Illustrations. The basis of the whole system is exhibited in the first diagram, which shows the relative positions of the parts of the mouth concerned in the production of speech-sounds—the throat, the tongue, and the lips.

The principal agents of articulation are the tongue and the lips, and these organs are represented in visible speech by a symbol which, accordingly as it is turned, presents to the eye the actual line of curvature of the organ. Thus (supposing the face to be turned to the right), when the root or back of the tongue is the modifying agent of a sound, the outline of the tongue forms a curve to the left; and this curve is accordingly the basis of every consonant letter which is pronounced with the tongue in that position. If you carry the eye down the first column of the Universal Alphabet, you will recognise this curve to the left in every symbol in the column. These twelve consonants, then, are all formed with the back of the tongue presented to the back of the mouth. The differences between the letters, I shall afterwards explain; but meantime, fix the principle in the mind that the curve to the left (C) has the absolute meaning that the tongue is so curved in pronouncing every letter of that outline. The sounds resulting from this attitude of the tongue are such as those heard at the end of the words *black*, *bag*, *bang*, *nach*, &c.

The top of the mouth is an arch, and the tongue has the power of shaping itself so as to present some portion of its surface to any given part of the arch. The back or root of the tongue can only act against the back of the arch, but it may do so at a variety of higher or lower positions, and these differences are all indicated by appropriate signs. To reach the front of the arch, the tongue must alter its line of curvature, and our organic symbol follows the organ and turns with it, being convex, or arched upwards, when the tongue is so shaped, and concave, or arched downwards, when the tip or point of the tongue is elevated. We have, then, three symbols all referring to the tongue; but the three symbols are only one symbol, just as the tongue in its three shapes is one tongue. This monosymbolic idea you will find is carried out through the whole alphabet, for vowels as well as consonants. All consonants are represented by one symbol, variously turned and variously modified by subordinate signs; and all vowels are

represented by one symbol similarly diversified by specific additions to the radical sign. This will be obvious on a glance at the Universal Alphabet. The symbols in columns 1, 2, 3, 4 are all consonants, and have a curve as their common characteristic; and the symbols in columns 6, 7, 8 are all vowels, and have a straight line as their common characteristic. This uniform and radical difference between vowel and consonant letters is not the least important among the new features of the Physiological Alphabet, as it informs the eye at once of the number of syllables in any word—every straight line being a vowel, and every vowel being necessarily a syllable.

The curve with the convex top  $\textcircled{O}$  will now be understood to signify that the tongue is similarly arched in forming all letters of that outline. The twelve consonants in the second column of the Universal Alphabet will be seen to have this curve in common. The name of the first curve  $\textbf{C}$  is "Back," and the name of the second curve  $\textcircled{O}$  is "Front;" the curves being, as explained, pictorial respectively of the "Back," or of the arched "Front," of the tongue. The tongue will be felt to have more or less of this front-convexity in the formation of such sounds as those at the beginning of the words, *ye, see, thee, she, &c.*

The third curve, concave above, and with its points turned upwards,  $\textcircled{O}$  denotes a corresponding attitude of the tongue, the point of which is elevated in forming every letter of this outline. The symbols in the third column of the Universal Alphabet will be seen to have this curve in common. The name of the curve is "Point." The tongue will be felt to have this pointed shape in forming such sounds as those at the beginning of the words *tay, day, nay, lay, ray, &c.* Column 1, then, consists of "Back Consonants;" column 2, of "Front Consonants;" and column 3, of "Point Consonants."

The only remaining curve presents the profile line of the lip when the face is turned to the right. This curve  $\textcircled{O}$ , therefore, symbolises the lip, and all letters presenting this outline are formed by the lips. The twelve symbols in the fourth column will be seen to have this curve in common. These, therefore, are all "Lip Consonants."

The organic basis of the curves is now, I trust, sufficiently understood, and we are prepared to examine the individual differences among the letters which have one curve in common. These differences will be seen to be only six in number. Descending column 1, you have all the varieties of form in the first six letters; the remaining symbols in the first column, and all the symbols in the other columns, being merely repetitions of the same outlines, turned so as to indicate the part of the mouth which is employed as the articulating agent.

The first modification is seen in the second symbol of column 1. This consists simply in the addition of a curve of opposite form to the radical curve. The construction of the symbols will be clearly understood from the table. (b 1.) Here, to the ends of the principal curve, its opposite curve is joined, but drawn of a subordinate size; and the compound symbol is called "mixed." When the letter is turned in the four directions, it is respectively (see Table)

“Back-mixed,” “Front-mixed,” “Point-mixed,” and “Lip-mixed.” Each of the component curves has still the same organic meaning. “Back-mixed” means the effect of the “back” curve mixed with the effect of its opposite, the “Lip” curve; “Front-mixed” means the effect of the “Front” curve modified by its opposite, the “Point” curve; “Point-mixed” means the effect of the “Point” curve modified by that of the “Front” curve; and “Lip-mixed” means the effect of the “Lip” curve modified by that of the “Back” curve. What these effects are, I shall afterwards explain. Meantime, the name of the symbol is all that I wish to be apprehended, because the name fully describes the form of the symbol, and this directs the learner how to put his organs in the configuration symbolized.

The fourth symbol in column 1 (passing the third symbol for a moment) is, you will perceive, also “mixed;” but in this the principal curve has undergone a change. It is indented or “divided” into a double curve, and the name of the symbol expresses this change, the word “divided” being added to the name of the “mixed” symbol. Thus, as the symbol is turned, the letter is “Back-mixed-divided,” “Front-mixed-divided,” “Point-mixed-divided,” and “Lip-mixed-divided.”

The third symbol in column 1 is, as you will now perceive, “divided,” but not “mixed,” and the name of the letter expresses the fact. As the symbol is turned, we obtain the four organic varieties, which are called respectively “Back-divided,” “Front-divided,” “Point-divided,” and “Lip-divided.”

In the fifth and sixth symbols in column 1, we have again the *primary* curves, with new signs attached. In both cases a line is drawn across the ends of the organic curve, figuratively *closing* the curve, to signify that the mouth-passage is “shut” by means of the organ symbolized. Thus, adding the sign of “shut”—a straight line—to the primary curve, we have, as the curve assumes its different positions, the four organic varieties, which are called respectively “Back-shut,” “Front-shut,” “Point-shut,” and “Lip-shut.” The effect of shutting the mouth-passage is heard at the beginning and end of such words as *cake*, *tight*, *peep*, &c. “Back-shut” is the organic name of the English letters *c* and *k*, as pronounced in the word “cake;” “Point-shut” is the organic name of the letter *t*, as in “tight;” and “Lip-shut” is the organic name of the letter *p*, as in “peep.” The mutual relations of the sounds of *k*, *t*, and *p*, are thus clearly manifested to the eye in the forms of their symbols; and the important fact is revealed at a glance, that the effects of *k*, *t*, and *p*, in speech, are merely the result of one articulative action of closing the mouth-passage, and that the only difference between *k*, *t*, and *p*, is that the passage is closed by means of the “back” of the tongue for *k*; by means of the “point” of the tongue for *t*; and by means of the “lips” for *p*.

All this is briefly expressed in the forms and in the names of the symbols “Back-shut,” “Point-shut,” “Lip-shut”; and, as with these elements, so with all others, “primary,” “mixed,” “divided,” &c. The name of each symbol expresses the means by which its sound is produced, and thus the symbols are really self-interpretting to those who possess the key to the alphabet.

As the "shut" curve denotes that the mouth-passage is shut by means of the organ represented, so the open curve denotes that the mouth-passage is open, and that the breath, in its emission, is merely modified by means of the organ symbolized. The "back" curve thus denotes that the breath is squeezed over the back of the tongue; the "front" curve shows that the squeezing takes place over the front of the tongue; the "point" curve denotes that the breath-squeezing takes place over the raised tip of the tongue; and the lip curve denotes that the breath is squeezed between the lips (with the effect of blowing to cool).

All the open curves, whether "mixed" or "divided," have the same signification with reference to the breath; the "mixed" curves show that two parts of the mouth are concerned in forming the appropriate breath-passage; and the "divided" curves show that the breath is emitted through "divided" or side apertures, instead of through one central aperture. For example, the "Front-mixed" curve—the second symbol in column 2—represents the position of the tongue in forming the hissing sound of S; the symbol shows that the "front" of the tongue is arched and the "point" raised at the same time, while the breath is squeezed through the channel thus narrowed over the whole fore-part of the tongue; and the "Front-mixed-divided" curve—the fourth symbol in column 2—shows that the tongue is in the same position, but that it now divides the passage for the emission of the breath—that is, the tongue, while otherwise shaped as for S, closes the central aperture through which the breath passes for that letter, and the air escapes through side passages over the point of the tongue; the result being the sound of TH, as in the word "thin." This illustration exemplifies another very important application of Visible Speech—namely, for the exact communication of native sounds to foreigners, and for the removal of defects and impediments of utterance.

The sixth symbol in column 1—the last of all the consonant forms—shows the organic curve, with its ends symbolically closed by a line partly straight and partly waving. The waving line denotes the soft palate, the organ which governs the passage to the nose; and this sign, wherever it is used, indicates that the nasal passage is open. Consequently the four symbols in the sixth line signify that the mouth-passage is shut by means of the symbolized organ, and that the breath passes through the nose. The organic varieties are respectively "Back-nasal," "Front-nasal," "Point-nasal," and "Lip-nasal."

The remaining half of the consonants in the Universal Alphabet—the lower section of cols. 1, 2, 3, 4—involve only one new part to be explained. All these symbols, you will perceive, have a short straight line in the centre of the curve. The straight line represents the orifice of the throat in the act of producing voice; and the twenty-four consonants containing this sign are in all respects the same as the preceding set, with the uniform addition of voice. Thus, "Back-voice," "Front-voice," "Point-voice," "Lip-voice," &c.

All letters must have names, by which they can be spoken of; and the sounds of the Visible Speech letters are learned through the medium of their names. It is not so with common letters. I

knew a bright little girl, who had been stupidly taught only the names of the letters in learning her A, B, C; and when she was asked to spell "girl," she said, without a doubt as to her accuracy, "b-o-y—girl." The names of the Visible Speech letters cannot be mistaken, as they are simply descriptive of the *forms* of the letters. Even a dull pupil will learn them all in half-an-hour; and what he will then have learned may be understood by considering the perfectly analogous nature of chemical formulæ. We look on the substance—water, for instance—in total ignorance of its composition, and its common name in no language gives us any information; but the chemist gives the substance an analytic name, and calls it  $H^2O$ , by which every person acquainted with the elementary symbols learns that water is composed of two parts of hydrogen and one part of oxygen. So we hear a sound without knowing how to form it, and the aspect of its common orthography tells us nothing; but the Visible Speech symbols inform the eye by their forms, or the ear by their names, exactly what is the organic mechanism of the sound; and we have only to *do* what the name directs, in order to produce the sound with certainty.

Twenty-five of the forty-eight elements already described we have in daily use in pronouncing our own language. The others are foreign sounds.

I shall now explain the construction of the Vowel symbols, and the mode in which they also represent definite attitudes of the organs of speech.

The second diagram in the annexed sheet illustrates three radical positions of the tongue from which all vowel sounds are developed. These will be seen to correspond very closely with the three consonant positions in the first diagram. Consonants and vowels, in fact, result from the same adjustments of the oral organs. This is one of the physiological discoveries on which the system of Visible Speech is based. The principle will be made completely manifest by a simple experiment. Prolong the vowel sound *ee*, and while doing so press the tongue two or three times upwards from below the chin, and the *ee* will be converted into *ye ye ye*.

This perfectly illustrates the difference between a vowel and a consonant, and proves that the same organic position may be made to yield either the one element or the other. The voice-channel is simply compressed for consonants and uncompressed for vowels, while, otherwise, it is of the same configuration for both classes of sounds. Thus the vowel *e* and the consonant *y* are mechanically different, but organically the same. *Y* is the "Front-voice" consonant, and the convex position of the tongue which produces *y* is the starting point of a front series of vowels. On the same principle, the configuration of the tongue which produces the "Back-voice" consonant forms the starting point of a series of "Back" vowels; and the combination of the "back" and "front" positions produces a third series of "mixed" vowels. This definite relation between vowel and consonant positions has only to be understood, and the Vowel symbols will be vocalized with uniformity by learners in any part of the world.

All vowels are represented by a straight line, which is the phy-



THE UNIVERSAL ALPHABET.

	1	2	3	4	5	6	7	8	9	0	
<i>a</i>	C	Q	O	C	I	I	I	I	Q	+	<i>a</i>
<i>b</i>	C	Q	B	C	I	J	I	C	0	+	<i>b</i>
<i>c</i>	C	Q	W	C	I	J	I	I	X	+	<i>c</i>
<i>d</i>	C	Q	W	C	Y	I	T	I	S	+	<i>d</i>
<i>e</i>	C	Q	B	D	I	J	U	C	Y	+	<i>e</i>
<i>f</i>	C	Q	B	D	I	J	I	I	O	<	<i>f</i>
<i>g</i>	C	Q	W	C	I	J	I	F	S	+	<i>g</i>
<i>h</i>	C	Q	W	A	I	J	I	F	0	+	<i>h</i>
<i>i</i>	C	Q	W	C	I	J	I	F	I	+	<i>i</i>
<i>k</i>	C	Q	W	C	I	J	T	F	I	+	<i>k</i>
<i>l</i>	C	Q	W	D	I	J	T	F	I	+	<i>l</i>
<i>m</i>	C	Q	W	D	I	J	I	F	Y	+	<i>m</i>
	1	2	3	4	5	6	7	8	9	0	

Lines *a* to *f*,  
 Vocalized Con-  
 sonants.  
 Languages Glides,  
 Lingual  
 Vowels.  
 Lines *g* to *m*,  
 Vocalized Con-  
 sonants,  
 Lhahized  
 Glides,  
 Lhahized  
 Vowels.

\* The Marginal Numbers and Letters may be used, instead of the Visible Speech Letters, to express the mechanism of sounds in common type. The following examples show the English, Scotch, and Irish pronunciations of the words 'Visible Speech':—

English {	4i	8d	zh	8d	4l	3i	ob	2b	4e	8a	ob	3e	3b	
	3	f	Q	f	I	D	W	I	Q	D	I	+	Q	
Scotch {	4i	8a	zh	7b	4l	3i	ob	2b	4e	8a	3e	3b		
	3	f	Q	I	D	W	I	I	Q	D	I	+	Q	
Irish {	4i	8d	zh	8a	4l	3i	ob	2b	4e	5f	8a	ob	3e	3b
	3	f	Q	I	D	W	I	I	Q	D	I	+	Q	

THE ENGLISH ALPHABET.

[The *Italic* letters are the English equivalents of the Visible Speech Letters in the corresponding sections of the Universal Alphabet.]

	1	2	3	4	5	6	7	8	9	0	
<i>a</i>					he <sup>r</sup> rot			el		h	ace <sup>r</sup> +
<i>b</i>		<i>s</i>	<i>sh</i>	<i>wh</i>		up		ale <sup>r</sup>			holder
<i>c</i>				<i>f</i>	boy			ell			<i>c</i>
<i>d</i>		thin			near	-tion*	-ces*	ill			<i>d</i>
<i>e</i>	<i>k</i>		<i>t</i>	<i>p</i>		ask	-al*	air <sup>r</sup>			<i>e</i>
<i>f</i>	ink		hint	lamp		arm <sup>r</sup>	sir	an			<i>f</i>
<i>g</i>		yes	ray			pool					<i>g</i>
<i>h</i>	zeal		azure	airy		old					<i>h</i>
<i>i</i>			<i>l</i>	<i>e</i>		all					<i>i</i>
<i>k</i>		then				full	-ure*				<i>k</i>
<i>l</i>	go		<i>d</i>	<i>b</i>	more	ore	-otry*				<i>l</i>
<i>m</i>	ng		<i>n</i>	<i>m</i>		on	-on*				<i>m</i>
	1	2	3	4	5	6	7	8	9	0	

\* The sounds marked \* occur only in unaccented syllables; as in

θɪɒθɪɒ (mention); Dωɪənɪənɪə places; ɔɪlɪɔɪlɪ (fatal);

Dωɪlɪ (pleasure); Oɪlənɪənɪ (history); Fʊlɪɔɪ (orator).

† The 'glide' 5a heard between a vowel and r; as in hero, airy, fiery, glory, &c.

‡ The sounds in 'ale' and 'old' include the 'glides' 5c. and 5L. Thus:—

hɪw (ale); ɦɪw (old).

¶ R final or before a consonant, as in air, arm, &c., is the 'Point-Glide' 5d. Thus:—

ɛɪ (air); ɛɪ (arm).

† Accent is always on the first syllable unless otherwise ɪDnɪ'Dwɪnɪ (expressed). The mark is placed ɪD'ɪD (before) the syllable to which it ɔɪlɪBɪVɪ (refers).

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*planetary Lecture.*

siological symbol of voice. To the straight line a point or a hook is added, to show the organic formation of individual sounds; the hook denoting those varieties which have the voice-channel expanded in the greatest degree. The position of the point or hook on the right or the left side of the straight line shows whether the vowel is modified by the front or the back of the tongue; and the position of the defining sign at the top or the bottom of the straight line, shows whether the tongue is high or low in reference to the palate or roof of the mouth. The name of each symbol expresses compendiously all the details of the mechanism of its sound. I shall explain each letter separately, and then I shall hope that the simplicity and definiteness of the principle of symbolization, as well as the suggestiveness of the nomenclature of the letters, will be understood. This mode of illustration will also impress on your memory the important fact, that all vowels are represented by one single symbol; varied by modifying signs, which follow the shifts of the tongue from back or front, or high or low positions, and thus show all changes in the organic attitudes from which differences of vowel sounds result.

In (a 8) the defining point stands at the top and on the right side of the vowel line. This is therefore the symbol of the "high front" vowel, the sound of which is *ee*. Inverting the symbol, the relation of the point to the line is inverted, and the symbol is now that of the "low back" vowel (c 8), the sound of which does not occur in our language.

In (a 6) shifting the defining point to the opposite side of the vowel line, we have the "high back" vowel, which is not a vernacular sound; and the "low front" vowel (c 8), which is heard in the syllables *ell, end, egg, &c.*

Between "high" and "low" there is of course an intermediate position, and this is denoted by placing the defining point at both ends of the vowel line, forming, as the symbol is presented, the "mid back" vowel (b 6), which is heard in the syllables *up, us, cut, &c.*; or the "mid front" vowel (b 8), which is heard in the syllables *ale, ace, aim, &c.*

The combined "back" and "front" positions of the tongue are denoted by uniting the respective signs of "back" and "front" modification; and the result is the symbol of the "high-mixed" vowel (a 7), which by inversion becomes that of the "low-mixed" vowel. Neither of these is an English sound.

The only remaining organic position is intermediate to the two last, and, consequently, central in the mouth—between "back" and "frnt," between "high" and "low;" yielding the "mid-mixed" vowel (c 7), the sound of which is heard in the French syllables *le, de, que, &c.*

These nine positions are all that the learner of the Universal Alphabet has to master. All other vowels result from these by two definite forms of modification—the one guttural, the other labial. The substitution of an open hook for the solid point as the defining sign, expresses a second series of nine "wide" or gutturally expanded vowels; and the addition of a bar across the centre of the vowel stem denotes that the lips are rounded or drawn across the orifice of the mouth, while the internal ad-

justments remain in all respects the same. In this way the scale of vowels is extended from nine to thirty-six elements, the mutual relations and characteristic differences of each of which are expressed in the name of its symbol. If you now pronounce the names of all the vowels, I think you will feel that from this brief explanation you have gained this important result, that the name of each symbol will communicate to your minds an abstract conception of the organic cause of the sound intended.

The second Table in the illustrative sheet—the English Alphabet—contains a very exact analysis of our vernacular sounds, embracing altogether fifty-two elements, and discriminating the peculiar shades of vowel quality which give character to our unaccented syllables, and which have never before been defined, or made capable of precise definition. The new classification of elementary sounds admits of these nice distinctions being presented to the eye without any risk of endangering practical utility by theoretical complexity. It is now for the first time possible to present in writing a standard of national pronunciation, comprehensible alike to natives and to foreigners. And what is here done for English may be accomplished by orthoepists of other countries for their respective languages; so that we may hereafter learn from books not only the letter of foreign tongues, but the minutest peculiarities of their utterance, and thus acquire the ability to speak like those “to the manner born,” although we have had no opportunity of hearing the language vocalized. This is no mere theory. It is a fact which has been already satisfactorily demonstrated. Such a use of Visible Speech requires, of course, a perfect acquaintance with the whole Universal Alphabet; but those who merely learn to read their vernacular language from Visible Speech letters require no theoretical knowledge whatever. A limited number of symbols have simply to be associated with known sounds; and when this association is made, the whole work of learning to read is accomplished.

I should be glad to see the system applied in this direction, for the benefit of the unlettered masses, who, but for such an instrument of quick education, must continue for ever in hopeless ignorance; shut out from the heaven on earth, the world of literature, and almost excluded from the world of thought. These masses darken all countries, and this means of enlightenment is equally applicable everywhere.

Accustomed as we have been to letters which have no relation to the things signified, and which require the labour of years before they can be used without a sense of effort, we can hardly realize the full value of the mighty master-key of knowledge which now lies ready to our hand. Before it can be popularly applied, however, it must be thoroughly understood by those who would be its philanthropic disseminators. There must be intelligent students before there can be successful teachers; and those who would readily qualify themselves must be instructed orally. I have met with a few apt students who have thoroughly mastered the system, by their own unaided efforts, from the published explanation; but these are exceptions, whose success simply proves the practicability of such a result. A book on sounds cannot be

made easy reading for those who have no previous knowledge of phonetics. While simple to a marvel when orally explained, "Visible Speech," I am fully aware, looks to the uninitiated eye like a thing most hard to be understood. I trust that the effect of the explanation which I have now the pleasure of giving, will satisfy you of the inherent simplicity of the subject, and induce some, at all events, to make themselves its disciples and missionaries.

I shall again direct your attention to the Universal Alphabet, for the purpose of explaining the remaining symbols. My investigations into the physiology of speech-sounds led to the discovery of a class of elements, in common use in all languages, which are neither vowels nor consonants; that is, which are formed with the organs in an intermediate condition between that which yields the narrow apertures of consonants, and that which produces the free resonant voice-channel of vowels. I have explained that vowels and consonants result from the same attitudes of the tongue, &c., with merely this difference of expansion in the passage through which the voice is emitted. You will therefore understand the nature of the semi-vowel, semi-consonant sounds, which I have denominated "Glides." They are non-syllabic, and comparatively indefinite sounds heard in the transition from one position of the organs to another. In the English Alphabet (column 5) the "glides" used in our language are illustrated in the four words "*hero, boy, near, now.*" In the first word, "*hero*," a transitional sound is interpolated between the *e* and the *r*. Of the existence of this sound, those who habitually use it are often quite unconscious, because it is not represented by any letter; but the presence or absence of this glide creates a well-marked difference, and the only difference, between the English and the Scotch pronunciations of the word "*hero*"; the English being *a9 a8 a5 g3 l6*; the Scotch, *a9 a8 g3 h6*. Now the English sound "*hero*" contains the same number of syllables as the Scotch "*hero*," consequently the additional sound is not a vowel; while it is as clearly not a consonant. It is therefore a "glide."

Of a similar nature are the three sounds represented by *y, r* and *w* in the words *boy, near, now*. They are indefinite elements resembling *y, r* and *w*, but without the breath-compression or friction of consonants. They at the same time resemble the vowels which are produced from the organic attitudes of *y, r* and *w*, but without the pure sonorous quality or the syllabic impulse of vowels.

Column 5 in the Universal Alphabet contains a complete series of the "glides." The principle of symbolization will be sufficiently understood by a comparison of the English glides with their allied consonants and vowels.

The glide theory, in fact, explains itself in the symbols. The curve of the allied consonant is seen in one half of the letter, and a vowel line in the other half.

The sixth glide in the "Universal Alphabet" (*f 5*) is a transitional aspirate common in Irish pronunciation. It is illustrated in the specimens of dialectic pronunciation printed between the two Tables in the sheet. These examples serve to show another

department in which visible speech will be of great utility; namely, in the writing of dialects, the study of which is so important in comparative philology. The examples embody the precise differences between the English, Scotch, and Irish pronunciations of the title of this system—differences, I may add, which ordinary letters would be powerless to represent.

The symbols in columns 9 and 0 of the Universal Alphabet are chiefly dialectic or modifying signs; but they include also the consonants formed in the throat, without modification by the tongue or the lips. Of these the first is a simple emission of breath through the expanded orifice of the windpipe—fitly symbolized by a circle. The effect denoted by this character is that of the English letter H. The second throat consonant is an emission of breath compressed by contraction of the throat-passage, giving the effect heard in whispering a vowel. This is consistently symbolized by an oval. A bar across the centre of the oval denotes the addition of vocality to guttural sibilation, as heard in hoarseness. This symbol is seen in column 9, line h. The last throat consonant is a closure of the orifice of the windpipe—the glottis—and this is appropriately symbolized by two curves meeting so as to form a cross (c 9).

Thus, as you will perceive, there is nothing arbitrary, from first to last, in this system of related letters. Every symbol has a physiological meaning deducible from the form of the letter itself; and every part of every letter has a distinct and uniform value; while the total number of radical signs which compose the symbols of all vowels, consonants, and glides, is only ten. ✓

As yet, a proper working alphabet of types has not been cut. The characters before you, have been electrotyped from wood for the purpose of illustrating the theory of the system. But these initiatory letters have the disadvantage of being all of equal height, like capitals. The symbols will be much more perspicuous in ordinary printing, as the straight lines of all the syllabic sounds, or vowels, will ascend or descend beyond the level of the consonants. Thus the variety in the height of letters, to which the eye is accustomed in romanic printing—but which is there merely arbitrary—will be turned to an important account in Visible Speech typography.

In the publication of the theory of this new science of "Universal Alphabetic," I have done all that can be done by an individual having no private interests to serve by the practical applications of the system. These must be left to be brought about by scientific and popular appreciation. My professional duties prevent me from devoting my time to the *vivâ voce* dissemination of the system as I should wish—for this is absolutely necessary to be done by some one;—and few opportunities have offered for my giving the requisite explanations either to scientific or popular audiences in this country. Wherever the system has been orally presented, however, it has won adherents, and, sometimes, enthusiastic students; and I shall hope that among my hearers to-night there will be found some who will not only be convinced of the value of Visible Speech, but who will give practical evidence of their conviction by efforts to realize its advantages. Above all, I trust that

the class will not be represented here of those who discountenance all innovations, however excellent in intention, for no other reason than that they are new. This lazy obstructiveness is only too common in the world, and often has to be pushed aside to clear the path of progress.

I had the pleasure of paying a short visit to America in the year before last, and I gladly embraced every occasion that presented itself for popularizing a knowledge of this subject in the United States and in Canada. I may add, that I found the then President of Harvard University, the Rev. Dr. Hill, as well acquainted with Visible Speech as I was myself; and in every assemblage of my hearers, in New York, Philadelphia, and Boston, as well as in Toronto and elsewhere in the Dominion of Canada, I had the gratification of finding always some who realized the grand possibilities of the invention, and were eager to make themselves masters of it. I return to America this year by invitation, and I hope to see—as I have every reason to believe—that the seed sown by the wayside in 1868 has taken root, and will not be likely to perish without bearing fruit.

In the month of December last I read a Paper before the Philological Society in London, in which I gave prominence to the application of the system in the department especially interesting to that body, namely, "How to Speak all Languages;" and at the close of the discussion which followed, the Society bore its valuable testimony in a formal Resolution, expressing its "strong sense of the beauty and great value of the system, and its ready applicability to purposes of philological investigation." I shall be glad if its applicability to educational purposes have been made similarly obvious to this meeting of the College of Preceptors.

It is the peculiarity of this system that it has no nationality. Except in its origin, it is as much Russian, Chinese, or Hottentot, as English. The principle is equally applicable to any language. A physiological truth, once developed, is deathless. Whether, therefore, the invention be first utilized in this or in a distant age; in connection with our living tongue, or with its yet unborn successor; or whether it must wait for that Universal Language, which must one day arise to serve the needs of the World's United States, the principle of the system will live to fulfil the ends of its discovery—the good of man and the glory of God.

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PRINCE LUCIEN BONAPARTE recognised the value for scientific purposes of the system Mr. Bell had explained. There were some nasal sounds peculiar to the French language, and also certain shades of vowel sound peculiar to the Picard dialect. He would be glad to see how these sounds could be written and interpreted. (Mr. Bell, jun., having previously left the room.)

An Indian gentleman who was present gave a peculiar Hindostanee word, and other gentlemen also supplied words in different languages; all which Mr. Bell, jun., when called into the room, read off with great exactness.

Dr. HODGSON, in moving a vote of thanks to Mr. Bell, said that he had never heard a more interesting paper, and was fully

satisfied that Mr. Bell had discovered a satisfactory method of indicating sounds by one system adapted to all languages. To Mr. Bell was due the honour of having spent immense labour upon a subject from which no remuneration, comparatively speaking, could at present be derived, though its utility would in all probability be universally recognised hereafter.

Mr. J. CONDER seconded the motion, and called attention to the growing necessity for a universal alphabet for telegraphic purposes, a necessity which would be fully met by Mr. Bell's system.

Mr. GILLESPIE enquired whether, in Mr. Bell's system of stenographic reporting, any difficulty was practically experienced in representing foreign quotations, which were very frequently misreported. He also wished to know whether the system of Visible Speech could be made available for teaching children to read.

Mr. BELL replied that every symbol in his ordinary system had a corresponding symbol in the stenographic system, and that every shade of expression in the pronunciation of foreign words could be represented in the latter as well as in the former. There would consequently be increased facility for reporting foreign quotations accurately. In reply to Mr. Gillespie's second question, he said that the system was at present chiefly applied in correcting defects of speech, and in teaching the deaf and dumb to articulate; but that children might with great advantage be taught to read first by the system of "Visible Speech," and it would then be more easy for them to acquire the knowledge of the ordinary notation.

Mr. BELL, then, at the request of the Chairman, exemplified the fifty-two elements which he had assigned to the English language, and gave a sketch of the general tendencies and peculiarities which marked the national and dialectic pronunciation of English.

A vote of thanks to Mr. Bell concluded the proceedings.







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